Occurrence and Persistence of Water Hyacinth (*Eichhornia crassipes*) in Michigan 2011-2012

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Background: Water hyacinth is an aquatic plant native to the warm climate of the Amazon Basin in South America. This species has been spread to a variety of aquatic ecosystems through multiple vectors (U.S. Distribution Map). In many of these non-native systems, water hyacinth has demonstrated a high level of invasiveness and large scale negative impacts. Water hyacinth has recently been detected in Michigan waters, and the potential impacts of this species to the Great Lakes basin are not clearly understood. The cooler Midwest climate may limit the plants ability to overwinter and propagate, but recent anecdotal and limited field data suggest this species may indeed pose a high threat to the region (with climate shift as an additional potential factor). The following information is not presented as a scientific study or empirical data, but is intended to communicate qualitative field observations gathered for a current grant project.

In October 2011, **t**he Michigan Department of Natural Resources (DNR), Wildlife Division, received a Great Lakes Restoration Initiative grant to develop a state-wide Early Detection and Rapid Response (EDRR) program for aquatic invasive species. One goal of this project specifically directs the DNR to engage in active surveillance of six target species: water hyacinth, water lettuce, Brazilian elodea, parrot feather, flowering rush, and European frog-bit. These six aquatic plant species had previously been reported in Michigan, but only with very low frequency and at very low distribution, and therefore, are not believed to be well established throughout the state. These factors make these species excellent candidates for EDRR program development and active field efforts.

Methods: Full time dedicated staff was hired by DNR to coordinate the grant work, along with a partnership with Michigan Natural Features Inventory (MNFI) and Michigan State University. The first step taken was to gather all known previous reports of these six species, and to then verify and assess each location individually.

A targeted list of sites was generated based on previous reports of all six species. These reports came from a wide variety of sources including; herbarium records, Department of

Environmental Quality staff, citizen scientists, and various others. The site list is also amended as needed based on any new reports gathered during the project.

Two seasonal employees were hired and trained by MNFI, and were tasked assignments jointly by MNFI and DNR. An assessment protocol and data gathering tool were developed, and staff begin field observations in May 2011. During this first field season, data points were taken at 35 unique water bodies/locations for four of the six species (the reports of Brazilian elodea and parrot feather were determined to be misidentifications).

Results: The following preliminary results are presented for water hyacinth only. Final results for all detected species will be presented in a full report following next year's field season. Data points were collected at 5 distinct locations for water hyacinth in Michigan (plus one in Canada, which was observed by field staff while conducting a separate project). Population estimates ranged from sparse (three of the five locations) to moderate (two of the five locations). These estimates are intended to provide a general description and are not statistically relevant.

Based on 2011 data, field observations in 2012 were targeted for southeast Lower Peninsula and heavily weighted towards flowering rush and European frog-bit detection probability. However, staff were again trained and instructed to look for all six species at every site. No new locations of water hyacinth were detected in 2012 (from 34 new sites). Four of the five water hyacinth Michigan sites were revisited in 2012 (from 17 total sites revisited in 2012). All 4 sites were again positive for water hyacinth, each estimated at the same population levels in 2011. The other positive site in Michigan was not readily accessible this past field season (a privately owned campground – more information is available upon request).

2013 surveillance activities have not yet been defined, but it is anticipated the sites which were detected in 2011 and 2012 will be revisited multiple times. Chemical treatment and mechanical removal of the EDRR species will also be conducted at key sites in 2013.

Discussion: While recognizing the data are very limited, water hyacinth populations have been documented from year to year at the same locations, and in similar abundance. Whether these are the same populations at each site, or are being introduced from a recurring source is still unknown, but developing a comprehensive risk assessment for this species may be a worthwhile task. In the meantime, this species will continue to be monitored for the duration of the grant project, and more comprehensive recommendations and conclusions may be available at project completion.

In addition to the active surveillance that has been conducted, an education and outreach component of the grant project has resulted in many discussions with interested stakeholders at various venues. Through these discussions, staff have been made aware of private landowners who claim that water hyacinth is not only over-wintering in their private pond or water garden, but that in some cases it is now thriving and becoming a burden to manage. While these reports have not been verified, it is interesting to note this anecdotal evidence of the potential invasiveness of water hyacinth in Michigan.

For more information on the EDRR grant project, please contact:
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